05143sequence listing.txt
SEQUENCE LISTING

<110> SOCIETE DE CONSEILS DE RECHERCHES ET D'APPLICATIONS SCIENTIFIQUES
(S.C.R.A.S.)

<120> Process for preparing recombinant heterocarpine

<130> RS 331 PCT

<150> FR 02/15563
<151> 2002-12-10

<160> 14

<170> PatentIn version 3.1

<210> 1
<211> 10
<212> PRT
<213> Pilocarpus Heterophyllus (peptide fragment)

<400> 1
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<210> 2
<211> 14
<212> PRT
<213> Pilocarpus Heterophyllus (peptide fragment)

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1   5   10

<210> 3
<211> 6
<212> PRT

Page 1

<213>   Pilocarpus Heterophyllus (peptide fragment)

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Pro Glu Ser Glu Ser Tyr
1   5

<210> 4

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for 5' specific cDNA products

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tccaagcagc aaaaactagt gacccagggg ccattatatc t   41

<210> 5

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for 3' specific cDNA products

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<210> 6

<211> 1675

<212> DNA

<213> Pilocarpus Heterophyllus (5' cDNA fragment of the cDNA encoding for heterocarpine)

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tctaggaatg gtgttcttca tttattcctt ttcgttcttg catggcttct gttggcggct 180

ctccatgcta actcaagttc ggatgagaga tcaacatata tagttcatat ggacaagacc 240

catatgccca aaaccttctc tagcccccac cattggtact cttcggtcgt tcgatccctc 300

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aagtctacaa agccaaccaa attaaatcgc cgtcgatcct caccacttct tgtatactct    360

tacgacaatg ctgctcatgg tttcagtgca gttttatctc aacaggaact tgaaactcta    420

aaaaagtctc caggtttcgt ctcagtttat gccgataaga cagcgacact tgacaccacc    480

catacacctg aatttctctc cctgaatact gccaacgggt tgtggcctgc ttcaaagtat    540

ggtgaagata taattgttgg tgttattgac agcggtgtct ggccggagag tgaaagttat    600

aatgatgatg gtatgggcgc tattccaagc agatggaagg gagaatgtga agctggacaa    660

gagttcaatt cctccatgtg caactcaaag cttattggag ctagatattt cgataagggt    720

atcattgcgg caaatcctgg gattaacatt agcatgaaat ctgccagaga tactatgggg    780

catgggactc acacatcctc cacagttgct gggaattatg tggatggcgt ttcattcttt    840

ggctatgcta aaggtacagc aaaaggagtg gcaccacggg cgagagtggc tatgtacaag    900

gtcatttttg acgaagggcg ctatgcatct gatgttcttg ccggtatgga cgcggctatt    960

gctgatggtg ttgatgtaat ttcaatatca atgggatttg atgagacccc gttgtatgaa   1020

gatcctatag caattgcctc attcgctgct acagagaagg gcgtagtggt ctcatcttca   1080

gcaggaaatg cagggccagc gctagggagc ttgcacaatg gaatcccatg gacgttaact   1140

gttgcagctg gaaccattga ccgttcattt gcaggcacta taactcttgg gagtggggaa   1200

accatcattg gatggacaat gttcccagcc agtgcttatg tagcagactt gccactgctt   1260

tataacaaga cttactctgc atgcaactca actcgattat tatctcaact ccgaactgac   1320

gccatcatcg tatgcgaaga agctgaagat tcggtatctg agcaaatatc tgttgtcagt   1380

gcatcgaaca ttcggggagc catatttgtt tcagattatg atgctgaatt atttgaactt   1440

ggtggtgtga ctattcctgg tgtcgtgatt agcaccaagg atgcaccggc tgtgatcagc   1500

tacgccagca atgatgtgaa acctaaggca agcatcaagt tccaacaaac tgttctgggc   1560

acaaagcctg caccagccgt ggctttctat acttctagag gtccgtcacc gagctatcca   1620

ggcatcttaa agccagatat aatggcccct gggtcactag tttttgctgc ttgga        1675
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<210> 7

<211> 1689

<212> DNA

<213> Pilocarpus Heterophyllus (3' cDNA fragment of the cDNA encoding for heterocarpine)

<400> 7

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cgtagtggtc tcatcttcag caggaaatgc agggccagcg ctagggagct tgcacaatgg    180

aatcccatgg acgttaactg ttgcagctgg aaccattgac cgttcatttg caggcactat    240
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aactcttggg agtggggaaa ccatcattgg atggacaatg ttcccagcca gtgcttatgt    300

agcagacttg ccactgcttt ataacaagac ttactctgca tgcaactcaa ctcgattatt    360

atctcaactc cgaactgacg ccatcatcgt atgcgaagaa gctgaagatt cggtatctga    420

gcaaatatct gttgtcagtg catcgaacat tcggggagcc atatttgttt cagattatga    480

tgctgaatta tttgaacttg gtggtgtgac tattcctggt gtcgtgatta gcaccaagga    540

tgcaccggct gtgatcagct acgccagcaa tgatgtgaaa cctaaggcaa gcatcaagtt    600

ccaacaaact gttctgggca caaagcctgc accagccgtg gctttctata cttctagagg    660

tccgtcaccg agctatccag gcatcttaaa gccagatata atggcccctg ggtcactagt    720

ttttgctgct tggattccaa atactgctac agcccaaatt ggtttgaata ccctcttgac    780

aagtgaatac aatatggttt ctggaacatc aatggcctgc cctcatgctg ctggtgtagc    840

tgctctcctt aagggcgcac accctgaatg gagtgcagct gctattaggt ctgcaatgat    900

gactacagca aatcccttgg ataacacact aaatccaatc cgggacaatg gtctaatcaa    960

tttcacatct gcttcacctt tagctatggg agccggccaa gttgatccta atcgggcact   1020

tgatcctggt ttgatttatg aaaccacccc acaagattat gtgagcctcc tctgcactct   1080

gaacttcacc caaaaccaaa tcctgtccat tacaagatca aaccgttaca gctgctccac   1140

ccctaatcct gatcttaact atccttcttt tattacttta cactacaaca caaatgcaac   1200

atttgttcag acttttcaca ggactgtgac taacgttgga ggaagcgcta caacttacaa   1260

ggccaagatc actgctcctc taggttctgt agttagtgtc tcaccagaca cattggcctt   1320

cagaaagcag tatgagcagc agagctacga gctcactatt gagtacaagc ctgatggtga   1380

agaaactgtt tcatttgggg aacttgtttg gattgaagaa aatgggaatc acactgtgag   1440

gagccctatt acagtgtcac cttccatgag taactttgtg tttatgggta cacaataatt   1500

gataaaaatt tgttctgatc acaactgtgg gaataatcga cgtttatgaa cccagaataa   1560

gttgtttggt cgtcttcaac attatcataa aggacttgaa tcatgtgtgt tgattttctg   1620

caaaaaaaaa aaaaaaaaaa aagtactctg cgttgatacc actgcttgcc ctatagtgag   1680

tcgtattag                                                           1689
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<210> 8

<211> 2630

<212> DNA

<213> Pilocarpus Heterophyllus (cDNA encoding for heterocarpine)

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tctaggaatg gtgttcttca tttattcctt ttcgttcttg catggcttct gttggcggct    180
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ctccatgcta actcaagttc ggatgagaga tcaacatata tagttcatat ggacaagacc    240

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aagtctacaa agccaaccaa attaaatcgc cgtcgatcct caccacttct tgtatactct    360

tacgacaatg ctgctcatgg tttcagtgca gttttatctc aacaggaact tgaaactcta    420

aaaaagtctc caggtttcgt ctcagtttat gccgataaga cagcgacact tgacaccacc    480

catacacctg aatttctctc cctgaatact gccaacgggt tgtggcctgc ttcaaagtat    540

ggtgaagata taattgttgg tgttattgac agcggtgtct ggccggagag tgaaagttat    600

aatgatgatg gtatgggcgc tattccaagc agatggaagg gagaatgtga agctggacaa    660

gagttcaatt cctccatgtg caactcaaag cttattggag ctagatattt cgataagggt    720

atcattgcgg caaatcctgg gattaacatt agcatgaaat ctgccagaga tactatgggg    780

catgggactc acacatcctc cacagttgct gggaattatg tggatggcgt ttcattcttt    840

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gtcatttttg acgaagggcg ctatgcatct gatgttcttg ccggtatgga cgcggctatt    960

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gatcctatag caattgcctc attcgctgct acagagaagg gcgtagtggt ctcatcttca   1080

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accatcattg gatggacaat gttcccagcc agtgcttatg tagcagactt gccactgctt   1260

tataacaaga cttactctgc atgcaactca actcgattat tatctcaact ccgaactgac   1320

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acaaagcctg caccagccgt ggctttctat acttctagag gtccgtcacc gagctatcca   1620

ggcatcttaa agccagatat aatggcccct gggtcactag tttttgctgc ttggattcca   1680

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gataacacac taaatccaat ccgggacaat ggtctaatca atttcacatc tgcttcacct   1920

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gaaaccaccc cacaagatta tgtgagcctc ctctgcactc tgaacttcac ccaaaaccaa   2040

atcctgtcca ttacaagatc aaaccgttac agctgctcca cccctaatcc tgatcttaac   2100

tatccttctt ttattacttt acactacaac acaaatgcaa catttgttca gactttttcac  2160

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cagagctacg agctcactat tgagtacaag cctgatggtg aagaaactgt ttcatttggg   2340

gaacttgttt ggattgaaga aaatgggaat cacactgtga ggagccctat tacagtgtca   2400

ccttccatga gtaactttgt gtttatgggt acacaataat tgataaaaat ttgttctgat   2460

cacaactgtg ggaataatcg acgtttatga acccagaata agttgtttgg tcgtcttcaa   2520

cattatcata aaggacttga atcatgtgtg ttgattttct gcaaaaaaaa aaaaaaaaaa   2580

aaagtactct gcgttgatac cactgcttgc cctatagtga gtcgtattag               2630
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<210> 9

<211> 2325

<212> DNA

<213> Pilocarpus Heterophyllus (encoding part of cDNA encoding for heterocarpine)

<400> 9

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aagacccata tgcccaaaac cttctctagc ccccaccatt ggtactcttc ggtcgttcga    180

tccctcaagt ctacaaagcc aaccaaatta aatcgccgtc gatcctcacc acttcttgta   ·240

tactcttacg acaatgctgc tcatggtttc agtgcagttt tatctcaaca ggaacttgaa    300

actctaaaaa agtctccagg tttcgtctca gtttatgccg ataagacagc gacacttgac    360

accacccata cacctgaatt tctctccctg aatactgcca cgggttgtg gcctgcttca     420

aagtatggtg aagatataat tgttggtgtt attgacagcg gtgtctggcc ggagagtgaa  ´ 480

agttataatg atgatggtat gggcgctatt ccaagcagat ggaagggaga atgtgaagct    540

ggacaagagt tcaattcctc catgtgcaac tcaaagctta ttggagctag atatttcgat    600

aagggtatca ttgcggcaaa tcctgggatt aacattagca tgaaatctgc cagagatact    660

atggggcatg ggactcacac atcctccaca gttgctggga attatgtgga tggcgtttca    720

ttctttggct atgctaaagg tacagcaaaa ggagtggcac cacgggcgag agtggctatg    780

tacaaggtca tttttgacga agggcgctat gcatctgatg ttcttgccgg tatggacgcg    840

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tatgaagatc ctatagcaat tgcctcattc gctgctacag agaagggcgt agtggtctca    960

tcttcagcag gaaatgcagg gccagcgcta gggagcttgc acaatggaat cccatggacg   1020

ttaactgttg cagctggaac cattgaccgt tcatttgcag gcactataac tcttgggagt   1080

ggggaaacca tcattggatg gacaatgttc ccagccagtg cttatgtagc agacttgcca   1140

ctgctttata acaagactta ctctgcatgc aactcaactc gattattatc tcaactccga   1200

actgacgcca tcatcgtatg cgaagaagct gaagattcgg tatctgagca aatatctgtt   1260
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aaccaaatcc tgtccattac aagatcaaac cgttacagct gctccacccc taatcctgat    1980
cttaactatc cttcttttat tactttacac tacaacacaa atgcaacatt tgttcagact    2040
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gctcctctag gttctgtagt tagtgtctca ccagacacat tggccttcag aaagcagtat    2160
gagcagcaga gctacgagct cactattgag tacaagcctg atggtgaaga aactgtttca    2220
tttggggaac ttgtttggat tgaagaaaat gggaatcaca ctgtgaggag ccctattaca    2280
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<210> 10

<211> 774

<212> PRT

<213> Pilocarpus Heterophyllus (heterocarpine)

<400> 10

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Met Arg Ser Arg Asn Gly Val Leu His Leu Phe Leu Phe Val Leu Ala
1               5                   10                  15

Trp Leu Leu Leu Ala Ala Leu His Ala Asn Ser Ser Ser Asp Glu Arg
            20                  25                  30

Ser Thr Tyr Ile Val His Met Asp Lys Thr His Met Pro Lys Thr Phe
            35                  40                  45

Ser Ser Pro His His Trp Tyr Ser Ser Val Val Arg Ser Leu Lys Ser
    50                  55                  60

Thr Lys Pro Thr Lys Leu Asn Arg Arg Arg Ser Ser Pro Leu Leu Val
65                  70                  75                  80
```

Tyr Ser Tyr Asp Asn Ala Ala His Gly Phe Ser Ala Val Leu Ser Gln
                85   90   95

Gln Glu Leu Glu Thr Leu Lys Lys Ser Pro Gly Phe Val Ser Val Tyr
            100   105   110

Ala Asp Lys Thr Ala Thr Leu Asp Thr Thr His Thr Pro Glu Phe Leu
            115   120   125

Ser Leu Asn Thr Ala Asn Gly Leu Trp Pro Ala Ser Lys Tyr Gly Glu
        130   135   140

Asp Ile Ile Val Gly Val Ile Asp Ser Gly Val Trp Pro Glu Ser Glu
145   150   155   160

Ser Tyr Asn Asp Asp Gly Met Gly Ala Ile Pro Ser Arg Trp Lys Gly
                165   170   175

Glu Cys Glu Ala Gly Gln Glu Phe Asn Ser Ser Met Cys Asn Ser Lys
            180   185   190

Leu Ile Gly Ala Arg Tyr Phe Asp Lys Gly Ile Ile Ala Ala Asn Pro
            195   200   205

Gly Ile Asn Ile Ser Met Lys Ser Ala Arg Asp Thr Met Gly His Gly
    210   215   220

Thr His Thr Ser Ser Thr Val Ala Gly Asn Tyr Val Asp Gly Val Ser
225   230   235   240

Phe Phe Gly Tyr Ala Lys Gly Thr Ala Lys Gly Val Ala Pro Arg Ala
                245   250   255

Arg Val Ala Met Tyr Lys Val Ile Phe Asp Glu Gly Arg Tyr Ala Ser
            260   265   270

Asp Val Leu Ala Gly Met Asp Ala Ala Ile Ala Asp Gly Val Asp Val
        275   280   285

Ile Ser Ile Ser Met Gly Phe Asp Glu Thr Pro Leu Tyr Glu Asp Pro
    290   295   300

Ile Ala Ile Ala Ser Phe Ala Ala Thr Glu Lys Gly Val Val Val Ser
305   310   315   320

Ser Ser Ala Gly Asn Ala Gly Pro Ala Leu Gly Ser Leu His Asn Gly
                325   330   335

Ile Pro Trp Thr Leu Thr Val Ala Ala Gly Thr Ile Asp Arg Ser Phe
            340   345   350

Ala Gly Thr Ile Thr Leu Gly Ser Gly Glu Thr Ile Ile Gly Trp Thr
     355   360   365

Met Phe Pro Ala Ser Ala Tyr Val Ala Asp Leu Pro Leu Leu Tyr Asn
     370   375   380

Lys Thr Tyr Ser Ala Cys Asn Ser Thr Arg Leu Leu Ser Gln Leu Arg
385   390   395   400

Thr Asp Ala Ile Ile Val Cys Glu Glu Ala Glu Asp Ser Val Ser Glu
             405   410   415

Gln Ile Ser Val Val Ser Ala Ser Asn Ile Arg Gly Ala Ile Phe Val
             420   425   430

Ser Asp Tyr Asp Ala Glu Leu Phe Glu Leu Gly Gly Val Thr Ile Pro
          435   440   445

Gly Val Val Ile Ser Thr Lys Asp Ala Pro Ala Val Ile Ser Tyr Ala
     450   455   460

Ser Asn Asp Val Lys Pro Lys Ala Ser Ile Lys Phe Gln Gln Thr Val
465   470   475   480

Leu Gly Thr Lys Pro Ala Pro Ala Val Ala Phe Tyr Thr Ser Arg Gly
          485   490   495

Pro Ser Pro Ser Tyr Pro Gly Ile Leu Lys Pro Asp Ile Met Ala Pro
          500   505   510

Gly Ser Leu Val Phe Ala Ala Trp Ile Pro Asn Thr Ala Thr Ala Gln
          515   520   525

Ile Gly Leu Asn Thr Leu Leu Thr Ser Glu Tyr Asn Met Val Ser Gly
     530   535   540

Thr Ser Met Ala Cys Pro His Ala Ala Gly Val Ala Ala Leu Leu Lys
545   550   555   560

Gly Ala His Pro Glu Trp Ser Ala Ala Ala Ile Arg Ser Ala Met Met
          565   570   575

Thr Thr Ala Asn Pro Leu Asp Asn Thr Leu Asn Pro Ile Arg Asp Asn
          580   585   590

Gly Leu Ile Asn Phe Thr Ser Ala Ser Pro Leu Ala Met Gly Ala Gly
          595   600   605

Gln Val Asp Pro Asn Arg Ala Leu Asp Pro Gly Leu Ile Tyr Glu Thr
     610   615   620

```
Thr Pro Gln Asp Tyr Val Ser Leu Leu Cys Thr Leu Asn Phe Thr Gln
625             630             635             640

Asn Gln Ile Leu Ser Ile Thr Arg Ser Asn Arg Tyr Ser Cys Ser Thr
            645             650             655

Pro Asn Pro Asp Leu Asn Tyr Pro Ser Phe Ile Thr Leu His Tyr Asn
            660             665             670

Thr Asn Ala Thr Phe Val Gln Thr Phe His Arg Thr Val Thr Asn Val
        675             680             685

Gly Gly Ser Ala Thr Thr Tyr Lys Ala Lys Ile Thr Ala Pro Leu Gly
    690             695             700

Ser Val Val Ser Val Ser Pro Asp Thr Leu Ala Phe Arg Lys Gln Tyr
705             710             715             720

Glu Gln Gln Ser Tyr Glu Leu Thr Ile Glu Tyr Lys Pro Asp Gly Glu
            725             730             735

Glu Thr Val Ser Phe Gly Glu Leu Val Trp Ile Glu Glu Asn Gly Asn
            740             745             750

His Thr Val Arg Ser Pro Ile Thr Val Ser Pro Ser Met Ser Asn Phe
        755             760             765

Val Phe Met Gly Thr Gln
    770
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<210> 11

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for 5' specific cDNA products

<400> 11
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<210> 12

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for 3' specific cDNA products

<400> 12
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<210> 13

<211> 2338

<212> DNA

<213> Artificial Sequence

<220>

<223> cDNA encoding for heterocarpine having undergone a deletion of the
      initiation codon and a deletion of the STOP codon

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tatggacaag acccatatgc ccaaaacctt ctctagcccc caccattggt actcttcggt   180

cgttcgatcc ctcaagtcta caaagccaac caaattaaat cgccgtcgat cctcaccact   240

tcttgtatac tcttacgaca atgctgctca tggtttcagt gcagttttat ctcaacagga   300

acttgaaact ctaaaaaagt ctccaggttt cgtctcagtt tatgccgata agacagcgac   360

acttgacacc acccatacac ctgaatttct ctccctgaat actgccaacg ggttgtggcc   420

tgcttcaaag tatggtgaag atataattgt tggtgttatt gacagcggtg tctggccgga   480

gagtgaaagt tataatgatg atggtatggg cgctattcca agcagatgga agggagaatg   540

tgaagctgga caagagttca attcctccat gtgcaactca agcttattg gagctagata   600

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ggctatgtac aaggtcattt ttgacgaagg gcgctatgca tctgatgttc ttgccggtat   840

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cccgttgtat gaagatccta tagcaattgc ctcattcgct gctacagaga agggcgtagt   960

ggtctcatct tcagcaggaa atgcagggcc agcgctaggg agcttgcaca atggaatccc 1020

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Leu His Leu Phe Leu Phe Val Leu Ala Trp Leu Leu Leu Ala Ala Leu
            20                  25                  30


His Ala Asn Ser Ser Ser Asp Glu Arg Ser Thr Tyr Ile Val His Met
        35                  40                  45


Asp Lys Thr His Met Pro Lys Thr Phe Ser Ser Pro His His Trp Tyr
    50                  55                  60
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Ser Ser Val Val Arg Ser Leu Lys Ser Thr Lys Pro Thr Lys Leu Asn
65   70   75   80

Arg Arg Arg Ser Ser Pro Leu Leu Val Tyr Ser Tyr Asp Asn Ala Ala
             85   90   95

His Gly Phe Ser Ala Val Leu Ser Gln Gln Glu Leu Glu Thr Leu Lys
            100   105   110

Lys Ser Pro Gly Phe Val Ser Val Tyr Ala Asp Lys Thr Ala Thr Leu
         115   120   125

Asp Thr Thr His Thr Pro Glu Phe Leu Ser Leu Asn Thr Ala Asn Gly
    130   135   140

Leu Trp Pro Ala Ser Lys Tyr Gly Glu Asp Ile Ile Val Gly Val Ile
145   150   155   160

Asp Ser Gly Val Trp Pro Glu Ser Glu Ser Tyr Asn Asp Asp Gly Met
            165   170   175

Gly Ala Ile Pro Ser Arg Trp Lys Gly Glu Cys Glu Ala Gly Gln Glu
            180   185   190

Phe Asn Ser Ser Met Cys Asn Ser Lys Leu Ile Gly Ala Arg Tyr Phe
        195   200   205

Asp Lys Gly Ile Ile Ala Ala Asn Pro Gly Ile Asn Ile Ser Met Lys
    210   215   220

Ser Ala Arg Asp Thr Met Gly His Gly Thr His Thr Ser Ser Thr Val
225   230   235   240

Ala Gly Asn Tyr Val Asp Gly Val Ser Phe Phe Gly Tyr Ala Lys Gly
            245   250   255

Thr Ala Lys Gly Val Ala Pro Arg Ala Arg Val Ala Met Tyr Lys Val
            260   265   270

Ile Phe Asp Glu Gly Arg Tyr Ala Ser Asp Val Leu Ala Gly Met Asp
        275   280   285

Ala Ala Ile Ala Asp Gly Val Asp Val Ile Ser Ile Ser Met Gly Phe
    290   295   300

Asp Glu Thr Pro Leu Tyr Glu Asp Pro Ile Ala Ile Ala Ser Phe Ala
305   310   315   320

Ala Thr Glu Lys Gly Val Val Val Ser Ser Ser Ala Gly Asn Ala Gly
            325   330   335

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Pro Ala Leu Gly Ser Leu His Asn Gly Ile Pro Trp Thr Leu Thr Val
              340   345   350

Ala Ala Gly Thr Ile Asp Arg Ser Phe Ala Gly Thr Ile Thr Leu Gly
              355   360   365

Ser Gly Glu Thr Ile Ile Gly Trp Thr Met Phe Pro Ala Ser Ala Tyr
    370   375   380

Val Ala Asp Leu Pro Leu Leu Tyr Asn Lys Thr Tyr Ser Ala Cys Asn
385   390   395   400

Ser Thr Arg Leu Leu Ser Gln Leu Arg Thr Asp Ala Ile Ile Val Cys
              405   410   415

Glu Glu Ala Glu Asp Ser Val Ser Glu Gln Ile Ser Val Val Ser Ala
              420   425   430

Ser Asn Ile Arg Gly Ala Ile Phe Val Ser Asp Tyr Asp Ala Glu Leu
              435   440   445

Phe Glu Leu Gly Gly Val Thr Ile Pro Gly Val Val Ile Ser Thr Lys
    450   455   460

Asp Ala Pro Ala Val Ile Ser Tyr Ala Ser Asn Asp Val Lys Pro Lys
465   470   475   480

Ala Ser Ile Lys Phe Gln Gln Thr Val Leu Gly Thr Lys Pro Ala Pro
              485   490   495

Ala Val Ala Phe Tyr Thr Ser Arg Gly Pro Ser Pro Ser Tyr Pro Gly
              500   505   510

Ile Leu Lys Pro Asp Ile Met Ala Pro Gly Ser Leu Val Phe Ala Ala
              515   520   525

Trp Ile Pro Asn Thr Ala Thr Ala Gln Ile Gly Leu Asn Thr Leu Leu
    530   535   540

Thr Ser Glu Tyr Asn Met Val Ser Gly Thr Ser Met Ala Cys Pro His
545   550   555   560

Ala Ala Gly Val Ala Ala Leu Leu Lys Gly Ala His Pro Glu Trp Ser
              565   570   575

Ala Ala Ala Ile Arg Ser Ala Met Met Thr Thr Ala Asn Pro Leu Asp
              580   585   590

Asn Thr Leu Asn Pro Ile Arg Asp Asn Gly Leu Ile Asn Phe Thr Ser
              595   600   605

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Ala Ser Pro Leu Ala Met Gly Ala Gly Gln Val Asp Pro Asn Arg Ala
    610                 615                 620

Leu Asp Pro Gly Leu Ile Tyr Glu Thr Thr Pro Gln Asp Tyr Val Ser
625                 630                 635                 640

Leu Leu Cys Thr Leu Asn Phe Thr Gln Asn Gln Ile Leu Ser Ile Thr
              645                 650                 655

Arg Ser Asn Arg Tyr Ser Cys Ser Thr Pro Asn Pro Asp Leu Asn Tyr
              660                 665                 670

Pro Ser Phe Ile Thr Leu His Tyr Asn Thr Asn Ala Thr Phe Val Gln
          675                 680                 685

Thr Phe His Arg Thr Val Thr Asn Val Gly Gly Ser Ala Thr Thr Tyr
    690                 695                 700

Lys Ala Lys Ile Thr Ala Pro Leu Gly Ser Val Val Ser Val Ser Pro
705                 710                 715                 720

Asp Thr Leu Ala Phe Arg Lys Gln Tyr Glu Gln Gln Ser Tyr Glu Leu
              725                 730                 735

Thr Ile Glu Tyr Lys Pro Asp Gly Glu Glu Thr Val Ser Phe Gly Glu
              740                 745                 750

Leu Val Trp Ile Glu Glu Asn Gly Asn His Thr Val Arg Ser Pro Ile
          755                 760                 765

Thr Val Ser Pro Ser Met Ser Asn Phe Val Phe Met Gly Thr Gln Leu
    770                 775                 780

Glu His His His His His His His
785                 790
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